



# UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE  
United States Patent and Trademark Office  
Address: COMMISSIONER FOR PATENTS  
P.O. Box 1450  
Alexandria, Virginia 22313-1450  
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/563,868	01/09/2006	Hitoshi Okazaki	396.45781X00	5301
20457	7590	10/10/2008	EXAMINER	
ANTONELLI, TERRY, STOUT & KRAUS, LLP			EOFF, ANCA	
1300 NORTH SEVENTEENTH STREET				
SUITE 1800			ART UNIT	PAPER NUMBER
ARLINGTON, VA 22209-3873			1795	
			MAIL DATE	DELIVERY MODE
			10/10/2008	PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/563,868	OKAZAKI ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	ANCA EOFF	1795	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

1) Responsive to communication(s) filed on 09 July 2008.

2a) This action is **FINAL**.                            2b) This action is non-final.

3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

4) Claim(s) 1-13 and 15-29 is/are pending in the application.

4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.

5) Claim(s) \_\_\_\_\_ is/are allowed.

6) Claim(s) 1-13 and 15-29 is/are rejected.

7) Claim(s) \_\_\_\_\_ is/are objected to.

8) Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

9) The specification is objected to by the Examiner.

10) The drawing(s) filed on \_\_\_\_\_ is/are: a) accepted or b) objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a) All    b) Some \* c) None of:

1. Certified copies of the priority documents have been received.
2. Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

1) <input type="checkbox"/> Notice of References Cited (PTO-892)	4) <input type="checkbox"/> Interview Summary (PTO-413)
2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)	Paper No(s)/Mail Date. _____ .
3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)	5) <input type="checkbox"/> Notice of Informal Patent Application
Paper No(s)/Mail Date _____ .	6) <input type="checkbox"/> Other: _____ .

## DETAILED ACTION

1. Claims 1-13 and 15-29 are pending in the application. Claim 14 is canceled.
2. The foreign priority documents JP 2003-288288, filed on August 6, 2003 and JP 2004-029979, filed on February 05, 2004 were received and acknowledged. However, in order to benefit of the earlier filing dates, certified English translations are required.

### ***Claim Rejections - 35 USC § 103***

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

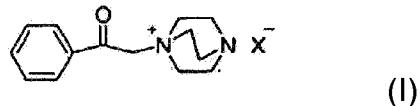
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-9, 15- 20 and 26-29 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amagai et al. (US Patent 5,807,975) in view of Tachi et al. (“Photochemical Reactions of Quaternary Ammonium Dithiocarbamates as Photobase Generators and Their Use in the Photoinitiated Thermal Crosslinking of Poly(glycidyl methacrylate”).

With regard to claims 1 and 28-29, Amagai et al. (US Patent 5,807,975) disclose alkyl sulfide type episulfide compounds with thiirane rings (see formula (I) in column 3). These compounds can be polymerized/cured in the presence of a curing catalyst to prepare an optical material. In this polymerization, any of the known curing catalysts for epoxy resins can be used (column 9, lines 51-57).

However, Amagai et al. fail to disclose the photobase generators of formula (1) in claim 1 of the instant application used for the polymerization/curing of the episulfide compounds.

Tachi et al. disclose a process of curing poly(glycidylmethacrylate) (polymer with epoxy groups) and the use of quaternary ammonium salts of formula (I) as photobase generators:



where  $X^-$  is dimethyldithiocarbamate,  $Br^-$ ,  $Ph_4B^-$  (tetraphenylborate),  $SCN^-$  (thiocyanate),  $F_4B^-$  (tetrafluoroborate) (page 1331, figure 1).

The quaternary ammonium salts of formula (I) meet the limitations for the photobase generator of formula (1) in claim 1 of the instant application, where Ar is phenyl, R is hydrogen and  $A^+$  is 1,4-diazobicyclo (2.2.2) octane.

The quaternary ammonium salt represented by formula (I), where  $X^-$  is a dimethyldithiocarbamate anion is good photobase generator and acts as effective photoinitiated thermal crosslinker for poly(glycidylmethacrylate) films (page 1341, Summary). Also, the quaternary ammonium salt of formula (I) , where  $X^-$  is a tetraphenylborate anion produces the photochemical insolubilization of poly(glycidylmethacrylate) (page 1340).

Therefore, it would have been obvious for one of ordinary skill in the art to use the quaternary ammonium salts disclosed by Tachi et al. as curing catalysts/photobase generators for the episulfide compounds with thiirane rings of Amagai et al., based on

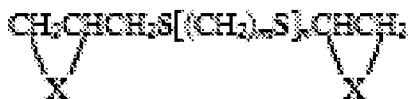
Amagai's teachings that any curing catalyst used for curing epoxy products can be used to cure the episulfide compounds (Amagai et al., column 9, lines 54-56).

The composition of Amagai modified by Tachi comprises the same compounds as the composition of the instant application so it has the property of being cured by irradiation with light, particularly with UV light, as required by claims 28-29. The fact that Amagai et al. disclose the thermal curing of episulfides is not a proof that the composition cannot be cured by irradiation with light.

With regard to claims 2 and 3, Tachi et al. disclose the photobase generators of formula (I) above and these photobase generators meet the limitations of claims 2 and 3 because Ar is an unsubstituted phenyl and the anion  $X^-$  can be a borate compound, such as  $Ph_4B^-$  or  $F_4B^-$  (figure 1 on page 1331).

With regard to claims 4-6, Amagai et al. disclose that the episulfide compounds have the structures of formulas (3) and (4) of the instant application.

Amagai et al. disclose that the alkyl sulfide type episulfide compounds have the general formula :

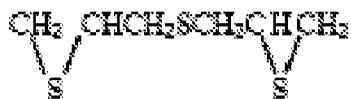


where, X is S or O, m is an integer of 1 to 6 and

n is an integer from 0 to 4 (column 3, lines 5-13).

Amagai et al. specifically disclose preferred compounds with X=S, n is an integer of 0 to 2 and m is an integer of 2 to 4 (column 4, lines 23-60).

Amagai et al. specifically disclose the compound having the formula:



(column 4, line 50) which meets the limitation of claim 6

of the instant application, with m,n=0.

Amagai et al. teach that values of n,m above 4 deteriorate the heat resistance and the refractive index of the optical material obtained by curing/polymerization (column 3, lines 63 – column 4, line 3).

With regard to claim 7, Tachi et al. further disclose that the quaternary ammonium salt of formula (I) with N,N-dimethyldithiocarbamate anion is soluble in organic solvents such as water, alcohols, THF (tetrahydrofuran), chloroform and DMF (page 1341, Summary). Tachi et al. further disclose a curing process of poly(glycidylmethacrylate) using quaternary ammonium salts of formula (I) as curing catalyst/photobase generator, the curing process taking place in THF or chloroform (page 1335).

With regard to claims 8 and 15-17, Amagai et al. teach that the episulfide compounds can be polymerized/cured in the presence of a curing catalyst to prepare an optical material. In this polymerization, any of the known curing catalysts for epoxy resins can be used (column 9, lines 51-57). Amagai et al. fail to disclose a method of curing using UV rays.

Tachi et al. disclose a process of curing of poly(glycidylmethacrylate) using quaternary ammonium salts of formula (I) as curing catalyst/photobase generator to form an insoluble film, said curing process taking place in THF or chloroform with 254 nm. radiation (page 1339 and page 1340).

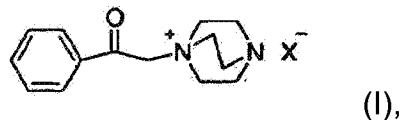
Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to use the quaternary ammonium salts disclosed by Tachi et al. as curing catalysts/photobase generators for the episulfide compounds with thiirane rings of Amagai et al. in a process of curing with UV rays, based on Amagai's teachings that any curing catalyst used for epoxy products can be used to cure the episulfide compounds (Amagai et al., column 9, lines 54-56).

With regard to claims 9 and 18-20, Amagai et al. teach that the episulfide compounds can be polymerized/cured in the presence of a curing catalyst to prepare an optical material. In this polymerization, any of the known curing catalysts for epoxy resins can be used (column 9, lines 51-57). Amagai et al. fail to disclose a method of curing in the absence of air

Tachi et al. further disclose that the photodecomposition rate of the photobase generator under N<sub>2</sub> was 5 times faster than that in air. For irradiation in air, unidentified peaks at 2-4 ppm were observed, due to oxidized photoproducts (pages 1337-1338).

While Tachi et al. do not specifically disclose a curing process performed in the absence of air but it would have been obvious to one of ordinary skill in the art at the time of the invention to performed the curing process under N<sub>2</sub> in order to accelerate the photodecomposition of the photobase generator and to avoid the oxidized photoproducts.

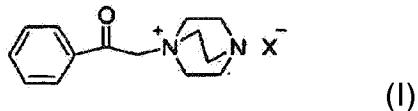
With regard to claim 26, the photo-base generator of Tachi et al. is represented by the formula (I):



wherein X<sup>-</sup> is N, N dimethyldithiocarbamate, Ph<sub>4</sub>B<sup>-</sup> (tetraphenylborate), SCN<sup>-</sup> (thiocyanate), F<sub>4</sub>B<sup>-</sup> (tetrafluoroborate) (page 1331, figure 1).

The compound of formula (I), wherein X<sup>-</sup> is Ph<sub>4</sub>B<sup>-</sup> is identical to the photo-base generator disclosed in formula (1) on page 3 and Example 1 in the table on pages 6-9 of the specification of the instant application. Absent a record to prove the contrary, it is the examiner's position that the photo-base generator of formula (I), wherein X<sup>-</sup> is Ph<sub>4</sub>B<sup>-</sup> is capable of generating 1,4-diazabicyclo(2.2.2)octane upon irradiation of ultraviolet rays. (MPEP 2112)

With regard to claim 27, Tachi et al. disclose a process of curing poly(glycidylmethacrylate) and the use of quaternary ammonium salts of formula (I) as photobase generators:



where X<sup>-</sup> is Ph<sub>4</sub>B<sup>-</sup> (tetraphenylborate), SCN<sup>-</sup> (thiocyanate), F<sub>4</sub>B<sup>-</sup> (tetrafluoroborate) (page 1331, figure 1).

5. Claims 10-13 and 21-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amagai et al. (US Patent 5,807,975) in view of Tachi et al. ("Photochemical Reactions of Quaternary Ammonium Dithiocarbamates as Photobase

Generators and Their Use in the Photoinitiated Thermal Crosslinking of Poly(glycidyl methacrylate)" as applied to claims 1 and 7 and in further view of Hojo et al. (US Pg-Pub 2003/0129385).

With regard to claims 10 and 21-22, Amagai modified by Tachi teaches the curable composition of claims 1 and 7 above (see paragraph 4 of the Office Action).

Amagai et al. further disclose that an internal/external release agent can be added to the composition for the purpose of improving the mold release characteristics of the cured material from the mold (column 12, lines 30-34) but fail to disclose the presence of a modified silicone oil in the curable composition.

Hojo et al. teach a photocurable resin composition used in the field of optical materials, said resin comprising modified silicone oil as release agent with very high releaseability (par.0148 and par.0150).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to include the modified silicone oil as release agent as disclosed by Hojo et al. in the modified composition of modified Amagai et al., in order to take advantage of the high releaseability properties of the modified silicone oil.

With regard to claim 11, modified Amagai teaches the curable composition of claim 10 above but fails to teach the presence of a silane coupling agent in the curable composition.

Hojo et al. further disclose that a silane coupling agent is added to the photocurable resin in order to improve the heat resistance and adherence (par.0163).

Therefore, it would have been obvious for one of ordinary skill in the art at the time of the invention to include the silane coupling agent disclosed by Hojo et al. in the modified composition of modified Amagai et al., in order to improve the heat resistance.

With regard to claims 12, modified Amagai teaches the composition of claim 10 above and Tachi et al. also teach that the curing process takes place under UV irradiation (page 1335 and pages 1339-1340).

With regard to claims 13, modified Amagai teaches the composition of claim 10 above and Tachi et al. further disclose that the photodecomposition rate of the photobase generator under N<sub>2</sub> was 5 times faster than that in air. For irradiation in air, unidentified peaks at 2-4 ppm were observed, due to oxidized photoproducts (pages 1337-1338).

While Tachi et al. do not specifically disclose a curing process performed in the absence of air but it would have been obvious to one of ordinary skill in the art at the time of the invention to performed the curing process under N<sub>2</sub> in order to accelerate the photodecomposition of the photobase generator and to avoid the oxidized photoproducts.

6. Claims 23- 25 are rejected under 35 U.S.C. 103(a) as being unpatentable over Amagai et al. (US Patent 5,807,975) in view of Tachi et al. ("Photochemical Reactions of Quaternary Ammonium Dithiocarbamates as Photobase Generators and Their Use in the Photoinitiated Thermal Crosslinking of Poly(glycidyl methacrylate)") and Hojo et al.

(US Pg-Pub 2003/0129385), as applied to claims 12-13 above and in further view of Ishii et al. (US Pg-Pub 2003/0195270).

Modified Amagai teaches the method of claims 12-13 (see paragraph 5 above) but fails to disclose a coating composition on a surface.

Amagai et al. also teach that the material obtained by polymerizing/curing the episulfides with thiirane rings is desirable as an optical material for lens for spectacles (abstract). The episulfides can provide resinous optical materials having a sufficiently high refractive index and a good balance between the refractive index and the Abbe's number as well as high heat resistance (column 21, lines 36-44).

Ishii et al. teach that materials with high refractive index can be used for optical materials such as spectacle lens, prisms, optical fibers but also as coating layers (par.0002). The above mentioned materials could be injected in a mold and cured, can be applied on substrates such as glass or plastic or interposed between two substrates (par.0119).

It would have been obvious for one of ordinary skill in the art to use the composition of modified Amagai in the process taught by Ishii et al., since the curable composition of modified Amagai et al. has sufficiently high refractive index, good balance between the refractive index and the Abbe's number and high heat resistance (Amagai et al., column 21, lines 36-42).

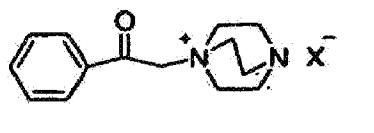
***Response to Arguments***

7. Applicant's arguments filed July 09, 2008 have been fully considered but they are not persuasive.

On page 8 of the Remarks, the applicant argues that the references used in the previous rejection to not teach or suggest a photocurable composition having a episulfide with thiirane ring and a photobase generator of formula (1), as required by the claim 1.

The examiner would like to show that Amagai et al. ('975) clearly teach the episulfide compounds with thiirane rings (see formula (I) in column 3) and teach that these compounds may be cured/polymerized with an of the known curing catalysts for epoxy resins (column 9, lines 51-57).

Tachi et al. disclose a process of curing poly(glycidylmethacrylate), which is a polymer/resin with epoxy groups, wherein the curing process uses a photobase generator of formula (I):



(I)

where  $X^-$  is dimethyldithiocarbamate,  $\text{Br}^-$ ,  $\text{Ph}_4\text{B}^-$  (tetraphenylborate),  $\text{SCN}^-$  (thiocyanate),  $\text{F}_4\text{B}^-$  (tetrafluoroborate) (page 1331, figure 1).

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to use the photobase generator of formula (I) as curing catalyst for the episulfides with thiirane rings of Amagai et al., based on the Amagai's teachings that

a curing catalyst for epoxy resins may be used and on Tachi's teaching that the epoxy-containing poly(glycidyl methacrylate) is cured using the compound of formula (I) as catalyst.

The composition of Amagai modified by Tachi comprises the same compounds as the composition of the instant application and, absent a record to the contrary, it is expected to have the same properties.

"[T]he discovery of a previously unappreciated property of a prior art composition, or of a scientific explanation for the prior art's functioning, does not render the old composition patentably new to the discoverer." *Atlas Powder Co. v. Ireco Inc.*, 190 F.3d 1342, 1347, 51 USPQ2d 1943, 1947 (Fed. Cir. 1999). Thus the claiming of a new use, new function or unknown property which is inherently present in the prior art does not necessarily make the claim patentable. *In re Best*, 562 F.2d 1252, 1254, 195 USPQ 430, 433 (CCPA 1977). (MPEP 2112-I. Something Which Is Old Does Not Become Patentable Upon The Discovery Of A New Property).

The fact that Amagai et al. ('975) disclose the thermal curing of the episulfides, as the applicant emphasizes on pages 9 and 15 of the Remarks, is not a prove that the episulfide-containing compositions cannot be cured by irradiation with light.

On page 9 of the Remarks, the applicant shows that the newly added claims 28 and 29 differentiate over by prior art by claiming the property of the composition of being capable to cure by irradiation with light, particularly with UV light. The rejection of claims 28-29 is included above, in paragraph 4 of the Office Action.

On page 9 of the Remarks, the applicant argues that the references used in the previous Office Action do not teach the photocurable composition of claim 1 and, moreover, the photobase generator wherein  $X^-$  is selected from the group consisting of a borate anion, a N,N-dimethylcarbamate anion, a thiocyanate anion and a cyanate anion, as required by claims 3 and 27.

The examiner would like to show that on page 4 of the previous Office Action it is clearly shown that Tachi et al. teach the photobase generator of formula (I), wherein  $X^-$  may be a borate anion, such as  $Ph_4B^-$  or  $F_4B^-$  (figure 1 on page 1331), as required by claim 3.

On page 7 of the previous Office Action it is clearly shown that Tachi et al. disclose the photobase generator of formula (I), wherein  $X^-$  is  $Ph_4B^-$  (tetraphenylborate),  $SCN^-$  (thiocyanate),  $F_4B^-$  (tetrafluoroborate) (page 1331, figure 1), as required by claim 27.

On page 9 of the Remarks, the applicant further argues that the references used in the previous Office Action do not teach that the photobase generator is capable of generating the compounds required by claim 26.

The examiner would like to show that on page 6 of the previous Office Action it is clearly shown that Tachi et al. disclose the photobase generator of formula (I), which is identical to the photobase generator of formula (1) on page 3 and Example 1 in the table on pages 6-9 of the specification of the instant application. Absent a record to the contrary, it is the examiner's position that the photo-base generator of formula (I), wherein  $X^-$  is  $Ph_4B^-$  is capable of generating 1,4-diazabyclo(2,2,2)octane upon irradiation of ultraviolet rays. (MPEP 2112)

On page 10 of the Remarks, the applicant is arguing that the applied references do not teach the limitations of claims 2, 4 and 5 of the instant application.

The examiner would like to show that on pages 3-4 of the previous Office Action it is clearly shown the structure of the photobase generator (I) of Tachi et al., which is

equivalent to the compound of formula (1) of the instant application when Ar is an unsubstituted phenyl, as required by claim 2.

Page 4 of the previous Office Action clearly shows the episulfide compounds of Amagai et al, which meet the limitations of claims 4-6 of the instant application.

Page 5 of the previous Office Action shows the teaching of Tachi et al. that solvents such as alcohols, THF (tetrahydrofuran), chloroform may dissolve the photobase generator of formula (I), as required by claim 7 of the instant application.

On page 10 of the Remarks, the applicant further argues that the applied references do not teach a method of UV-curing the composition comprising episulfides with thiirane rings and the photobase generator of formula (I) and do not teach a curing process in the absence of air of same composition. However, Tachi et al. teaches a curing process using radiation at 254 nm (UV radiation) (pages 1339-1340) and also teaching a curing process under N<sub>2</sub>, due to the fact that irradiation in air leads to oxidized by-products (pages 1337-1338). Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to performed the curing process under N<sub>2</sub> in order to accelerate the photodecomposition of the photobase generator and to avoid the oxidized photoproducts.

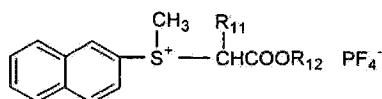
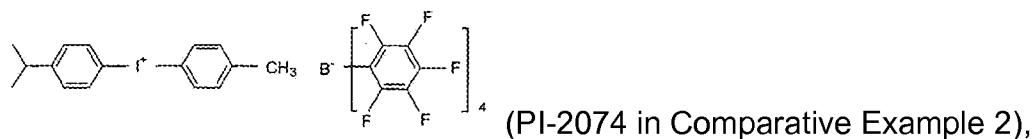
On pages 10-11 of the Remarks the applicant further argues that the applied references do not teach a cured product having the features of the instant application. However, the examiner would like to show that Amagai et al. disclose that the

epoisulfide compounds may be cured/polymerized to prepare an optical material, which is equivalent to the cured product of the instant application.

The applicant is reminded that claims 15, 17-18 and 20 are product-by-process claims and, even though the claims are limited by and defined by the process, the determination of patentability is based on the product itself (MPEP 2113). Therefore, the cured/polymerized product of Amagai et al. meets the limitation of these claims.

On pages 11-13 of the Remarks, the applicant points to the Examples and Comparative Examples on pages 22-36 of the specification, in order to prove unexpected results. The applicant points out the fact that Comparative Examples 2-5 on pages 24-27 of the specification utilize photoacid generators and lead to compositions that do not completely cure and cause tackiness.

The examiner would like to point out the fact that the Comparative Examples 2-5 of the specification use a composition comprising an episulfide compound and the following photoacid generators:



and 5).

However, such photoacid generators are not disclosed by the primary reference Amagai et al. ('975) as curing catalysts. As the applicant emphasizes on page 15 of the Remarks, various curing catalysts are disclosed in column 9, line 57-column 12, line 3 but the above-mentioned photoacid generators are not indicated. Moreover, no photoacid generators are specifically disclosed as curing catalysts for the episulfide-containing composition of Amagai et al so the Comparative Examples 2-5 of the instant application are not sufficient to overcome the rejection based on Amagai et al. and Tachi et al.

On page 14 of the Remarks, the applicant shows that the addition of modified silicon oil and silane coupling agent improves the properties of the composition.

However, on page 8 of the previous Office Action is shown that the addition of modified silicon oil and silane coupling agent is known in the art of making optical articles, as evidenced by Hojo et al.

On pages 14-16 of the Remarks, the applicant shows that Amagai et al. disclose episulfide compounds and the fact that these compounds may be cured/polymerized to obtain an optical article. The applicant cites that "the episulfide compounds can be polymerized/cured in the presence of a curing catalyst to prepare an optical material, any of the known curing catalysts for epoxy resins being used " (column 9, lines 51-57) and further shows that various curing catalysts are disclosed in column 9, line 57-column 12, line 3. The applicant emphasizes that Amagai et al. disclose many catalysts but did not disclose or suggest or direct one of ordinary skill in the art to the specific photobase generators of Tachi et al.

The examiner maintains the position that Amagai's teaching that "the episulfide compounds can be polymerized/cured in the presence of a curing catalyst to prepare an optical material, any of the known curing catalysts for epoxy resins being used" would motivate one of ordinary skill in the art to use the photobase generator of formula (I) of Tachi et al., which is a curing catalyst of the epoxy-containing poly(glycidyl methacrylate) , as curing catalyst for the composition based on episulfides of Amagai et al.

On pages 15-16 of the Remarks the applicant argues that Amagai et al. teach that the curing process takes place at 80oC (thermal curing) and there is no teaching or suggestion of a photocuring process or a photocurable composition.

However, the examiner would like to show that Amagai et al. was not relied upon for showing a photocuring process, such process being taught by Tachi et al., as shown in the rejection of claim 8 on page 5 of the previous Office Action.

The composition of Amagai modified by Tachi comprises the same components as the instant application so it should be capable of being cured by light. The fact that Amagai et al. teach that episulfide compounds are cured by heat is not a record to prove that they cannot be cured by irradiation with light.

On page 16 of the Remarks, the applicant shows that Tachi et al. use the photobase generators (I) for the photo-initiated thermal crosslinking of poly(glycidyl methacrylate)(PGMA) but do not make any reference to optical articles and concludes that one of ordinary skill in the art concerned with Amagai et al. would not have looked to the teachings of Tachi et al.

On pages 17-18, the applicant further argues that the episulfide compounds are different in properties than poly(glycidyl methacrylate), that the episulfides comprise a thiirane ring while poly(glycidyl methacrylate) does not.

The examiner agrees that episulfide compounds and poly(glycidyl methacrylate) are different but maintains the position that Amagai's teaching that "the episulfide compounds can be polymerized/cured in the presence of a curing catalyst to prepare an optical material, any of the known curing catalysts for epoxy resins being used" (column 9, lines 54-57) would motivate one of ordinary skill in the art to use the photobase generator (I) as curing catalyst for the episulfide compounds, the photobase generator (I) being disclosed by Tachi et al. as curing catalysts for the epoxy-containing poly(glycidyl methacrylate) resin.

On page 19, the applicant argues that the combined teachings of Amagai et al. and Tachi et al. do not teach or suggest the composition of claims 3 and 27.

However, the examiner would like to show that Tachi et al. disclose the photovase generator (I) which meets the limitations of claims 3 and 27, as shown on pages 4 and 7 of the previous Office Action.

On page 19 of the Remarks, the applicant further argues that Amagai et al. teach the thermal curing of episulfide compounds and that one of ordinary skill in the art would not be motivated to combine the teachings of Amagai et al. with the teachings of tachi et al., which disclose a photoinitiated crosslinking reaction.

The examiner maintains the position that Amagai's teaching that "the episulfide compounds can be polymerized/cured in the presence of a curing catalyst to prepare an

optical material, any of the known curing catalysts for epoxy resins being used" (column 9, lines 54-57) would motivate one of ordinary skill in the art to use the photobase generator (I) as curing catalyst for the episulfide compounds, the photobase generator (I) being disclosed by Tachi et al. as curing catalysts for the epoxy-containing poly(glycidyl methacrylate) resin. As the photobase generator (I) is used in a process of curing with UV light, it would have been obvious to one of ordinary skill in the art to cure the composition comprising episulfide compounds and the photobase generator (I) with UV light.

On pages 20-21, the applicant argues that Ishii et al. and Hojo et al. do not cure the deficiencies of Amagai et al. and Tachi et al.

The examiner would like to show that Hojo et al. was relied upon to show that modified silicone oil and silane coupling agents are known as additives for photocurable compositions used for optical articles (see pages 8-9 of the previous Office Action) and Ishii et al. was relied upon to show that materials with high refractive index, such as the material of Amagai et al., may be used for optical articles and coating layers (see page 10 of the previous Office Action).

### ***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to ANCA EOFF whose telephone number is (571)272-9810. The examiner can normally be reached on Monday-Friday, 6:30 AM-4:00 PM, EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cynthia H. Kelly can be reached on 571-272-1526. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/A. E./  
Examiner, Art Unit 1795

/Cynthia H Kelly/  
Supervisory Patent Examiner, Art Unit 1795